whilst they are pursuing their studies in this institution. We have also twelve exhibitions of 50*l*., four of 15*l*., and two of 25*l*., which are awarded annually by the Government. These are only the nucleus, so to speak, of numbers of exhibitions which are given in various localities, and that bring to this institution for training, the men who have the faculty for science teaching, and who will be the future teachers for science in this country. I am sure no one can have been present to-day, and have seen those young men advance to the table, and have seen them receive their certificates of associateship, and their honourable awards for their successful studies, without feeling that those men are going to carry to all the centres of industry an amount of light and knowledge which will be of immense advantage, not only to themselves, but to the industry with which they are associated. In every part of England there is a demand for technical instruction, and that demand is very much groping in the dark, for our people hardly understand what they mean by it yet. It means they want to know the *rationale* of the work which they are doing. They are tired of working by rule of thumb, that when, as I have heard a Dyer explain how he got certain results, he tried his alkalies and acids by dipping his thumb into them and tasting them, and when he found the components for some particular dye, he took a shovelful of this and a shovelful of the other, and so arrived at certain results which he could rarely arrive at with precision again, but which was mere guesswork, rule of thumb, chance, and accident; all that is passing away, and I believe, as the result of the good work that is doing in this institution. I am sure you will all join with me in expressing the hope that our Dean, who holds that title for the first time during the last year, will long remain at the head of this institution, to carry it to that success to which he aspires, and which he has done his utmost, by his noble effort and by his constant and eloquent advocacy, to secure.

DUNSINK OBSERVATORY[1]

MR. DREYER, having been appointed to succeed the late Dr. T. Romney Robinson as director of the Armagh Observatory, will vacate his post here next September. An advertisement has been inserted in NATURE inviting applications for the post of assistant. I have received a number of replies, but I am not yet in a position to make a definite recommendation. I do not like to allow Mr. Dreyer's resignation to pass without expressing the high opinion I have of the manner in which his duties here were discharged.

The meridian circle has been as before in the entire charge of Mr. Dreyer. During the past year Part IV. of the Dunsink Observations and Researches has been issued, in which is contained an account of the meridian circle and a catalogue of the red stars whose places have been determined. In July and August many nights were spent observing the two bright comets, but the weather was so unsettled that only four observations of Comet III. and two of Comet IV. could be secured on the meridian.

In September a series of observations of stars between $-2°$ and $-23°$ declination were commenced. In all there have been made 713 observations of transits, and 582 observations of declination; the reductions to apparent place are completed for R.A. up to December 11, and for decl. up to March 10.

The meantime clock service has been continued throughout the year. The circuit has been tested on 349 days—from July 1 up to June 14—with the following results :—

265	days' error	not greater than 1 sec.
56	,,	between 1 sec. and 2 secs.
28	,,	greater than 2 secs.

I referred in my last report to the chronograph which Mr. Grubb has had in hand. From a great press of other work, the instrument has not yet been quite finished, but I think we may now regard the chief difficulties as conquered, and I look forward very shortly to having a chronograph which will enable us to do real justice to the meridian circle.

The South Equatorial has, as before, been chiefly employed by myself in the observations of stars for annual parallax. The number of the observations made altogether amount to 186. This number is less than that in former years, because several series of observations have been brought to a close during the present year, and the results have been discussed and prepared for publication. I now submit the manuscript which is ready for the press as Part V. of our publications. The work will be considerably larger than the parts formerly issued, and will contain 200 pages or somewhat more. It consists entirely of the parallax researches made by myself at the South Equatorial in the last four years, and brief abstracts have occasionally appeared elsewhere. I now only glance at the portions completed since the last visitation.

In my last report I stated that the measures of the position angle of $+50°$, 1724, from Groombridge, 1618, required further discussion: that discussion they have since received, and the result is very satisfactory. From the distances I had obtained from Gr. 1618 a parallax of

$$0''\cdot334 \pm \cdot036.$$

From the position angles the discussion now submitted gives a parallax of

$$0''\cdot314 \pm \cdot031.$$

By combining these results, we find as the result of 106 nights of observation the mean value

$$0''\cdot322 \pm \cdot0''\cdot028.$$

Considering the smallness of the probable error, it can hardly be doubted that this object has a parallax of a third of a second.

I also submit the completely discussed observations of 368 stars which have been examined in the manner already described as reconnoitring for annual parallax. In the great majority of cases the results are negative, yet even in these cases I believe the work is of value as a part of the general survey of the heavens. It is also, I believe, the only systematic effort which has yet been made to search for the nearest neighbours of the sun.

I am, however, glad to say that all the results of this work are not purely negative, but that certainly in one instance, and probably in others, results of considerable interest have arisen. At the present moment I am only in a position to speak definitely as to one object, viz. the star 6 Cygni B = Σ2486.

My attention was directed to this star from the circumstance that the reconnoitring observations indicated a probable parallax, and I determined to observe it systematically. The observations were made on 33 nights, the first being November 30, 1879, and the last being December 22, 1881, observations of the distance and of the position angle now submitted. The mean value of the parallax from the distances is—

$$+ 0''\cdot504 \pm \cdot060,$$

and from the positions

$$+ 0''\cdot383 \pm \cdot130,$$

the mean being

$$+ 0''\cdot482 \pm 0''\cdot054.$$

It is a matter of considerable interest to observe that this is about the same parallax as that of 61 Cygni, another object in the same constellation, and a double of the same character.

The proposed part v. will consist of five papers, as follows :—(1) Reconnoitring observations of 368 stars, with a view of finding whether they have a large parallax; (2) on the annual parallax of Groombridge 1618; (3) further researches on the annual parallax of 61 Cygni; (4) on the annual parallax of P. III., 242; (5) on the annual parallax of 6 Cygni B.

Brief accounts of the results of 2, 3, 4 have already appeared in the *Proceedings* of the Royal Irish Academy or in the special astronomical journals. It is now proposed that they shall be issued fully and with all the information necessary to enable astronomers to judge them adequately.

Besides this work, which I now submit as completed, there is a large mass of other work which is in a partially completed state. The red star Sch 249 (*a*) seems to have a parallax, and I have completed two sets of observations thereon. These have indeed been finished for some time, but I have not yet been able to complete the discussion, and further observations will probably be necessary. I have also completed two sets which will give four independent determinations of the parallax of μ Cephei. There are also some hundreds of the reconnoitring observations in a half-completed condition, most of which I hope to observe during the autumn.

Up to the present I have almost entirely confined my work with the South Equatorial to the researches on annual parallax with which Dunsink is historically associated. I have, however, after some hesitation, decided to co-operate in the proposal of Mr. Gill, her Majesty's Astronomer at the Cape, to determine

---

[1] Report on the Work of the Dunsink Observatory between July 6, 1881, and June 26, 1882, made to the Board of Trinity College, Dublin, at the Annual Visitation on June 27, 1882. By Prof. Robert S. Ball, LL.D., F.R.S., Royal Astronomer of Ireland.

© 1882 Nature Publishing Group

the sun's parallax by observation of Victoria and Sappho. I have already commenced the preliminary work, and I anticipate that much time will be devoted thereto in the ensuing autumn.

ROBERT S. BALL

SCIENCE IN BOHEMIA

A CORRESPONDENT, who was present at the recent meeting of the Bohemian Naturalists, sends us the following brief report:—

The second meeting of Bohemian Naturalists and Physicians was held during May 24–30 in Prague (NATURE, vol. xxvi. p. 66). This meeting, in which over 600 members (some of them coming from Poland) took part, seems to have proved sufficiently that the above-named Slavic tribe (counting only something over six millions of souls) is not less successful in cultivating and promoting science in its own language, than other small nations (Dutch, Swedes, &c.).

In the two general meetings the following addresses were given:—By Dr. Schafarik, Professor in the Bohemian University, on the aims of chemical investigation, in which the subject was treated from an unusually deep and philosophic point of view; and by Dr. Holub, on the importance of the medical profession in transatlantic countries. In this address the essayist pointed out that the great power which had been obtained by the English in transatlantic countries is especially due to the investigations made by them from the scientific, commercial, economical, and strategical point of view. Dr. Holub further referred to other experiences of that kind, which he made in his travels in South Africa, already known to the readers of NATURE (vol. xxiv. pp. 35–38).

In the Section for Medicine, papers were read by the following gentlemen:—Doctors Eiselt, Janovsky, Maixner, Drozda, Thomayer, Chodounsky, Hlava, Wiktor, Zahor, Pelc, Böhm, Belohradsky, Ehrmann, Carda, Krasinski, Chudoba, Mayzel, Steffal, Wach.

In the Section for Surgery, papers were read by Doctors Schoebel, Obtulowicz, Janovsky, Janda, Kuniewicz, Michl, Medal, Talko, Weiss, Bastyr, Jerzykowski, Ostrcil, Carda, Michl, Matlakowski, Spott, Maixner, Skalicka.

In the Section for Pharmacy, papers were read by Doctors Belohoubek, Jandous, Fragner, and Stepanek.

In the Section for Mathematics and Physics, Dr. E. Weyr read a paper on the construction of a hyperboloid of osculation; J. Vanecek, on general inversion; V. Jaeger, on the solution of equations of 4th degree; K. V. Zenger, on a dispersive parallelopipedon, and on microscopes with endomersic lenses; Dr. Doubrava, on sensitive flames; Dr. Becka, on comets; F. Machovec, on the construction of certain curves; Dr. Weyr, on the construction of rational curves in space, of third, fourth, fifth, and sixth degrees; B. Prochazka, generalisation of stereographic sections of planes of second degree; A. Sucharda, on movements of curved planes; F. Toms, construction of section lines of two conic sections; F. Cechac, contributions to electrotechnics; Dr. A. Seydler, on the use of quaternions for the solution of a certain mechanical problem; Dr. V. Strouhal, on the peculiarities of magnetic and galvanic steel; E. Dziewulski, electric conductivity of mixtures of alcohol and water.

In the Section for Natural Science, papers were read by Dr. Celakovsky, on the sympodial constitution of vine-branches; J. Szyszylowicz, on the influence of light upon the transformation of matter in plants; F. Bayer, on the asymmetry in the shoulder-blade circle of frogs and some birds; V. T. Velenovsky, on the flora of Bohemian chalk-formation; Dr. Palacky, on the relations of the American and Bohemian flora; F. Sitensky, on the turfs from the giant mountains; K. Cermak, on the stratification of the alluvium and diluvium in certain parts of Bohemia, the fauna of these strata, and their deposition over older formations; Dr. Mayzl, on the division of cells; Dr. Fric, on the Sauria found in the permic formation of Bohemia; F. Safranek, on a new rock found near Tabor (Bohemia); J. Korensky, on the diluvial fauna from the rock-cave near Tetin; J. Kafka, on Bohemian bryozoa; Dr. Woldrich, on the diluvial system of Central Europe; G. Ossowski, geology of Wolonia; Dr. Novak, contributions to the fauna of Bohemian Siluric formation; J. Fric, contribution to the ontogeny of Copepoda; Dr. Kamienski, contribution to the morphology of the urticularii; J. Ssyszylowicz, conservation of spores of plants during the winter; K. Taranek, on rhizopoda and diatomacæa of South Bohemian turfs; S. Klnava, criteria of modern petrology; Dr. Celakovsky, comparison of indusia of ferns and oval integumenta; F. Safranek, on a new find of opals and chalcedons near Tabor; Dr. Vejdovsky, on the male of *Lernæpoda selachiorum*, and on Bohemian Planariæ; Dr. Hansgirg, on Bohemian Algæ, and on the movements of Oscillariæ; J. Ulicny, on Moravian Molusca; Dr. Zulinski, on mineralogical symbolics; Dr. Palacky, on the flora in the Bohemian chalk formation; C. Zahalka, geological map of the environments of Jicin; Dr. Kamienski, growth of plants in an atmosphere not containing carbon dioxide; F. Posepny, on the disintegration of rocks; Dr. Rostafinski, on the distribution of Galician fishes, and on the formation of hormogonia.

In the Chemical Section papers were read by Prof. Butleroff, on the oxidation of isodibutylene by potassium permanganate (presented); Dr. Radziszewski, on physiological oxidation; F. Stolba, application of aluminium-metal in laboratories; A. Belohoubek, on crystallised hydrates of potassium; Dr. B. Brauner (Manchester), on the atomic weight of didymium and other researches, regarding the chemistry of rare earth-metals (presented); F. Chodounsky, on fermentation; Prof. Preis, on sodium sulfarsenite; Dr. Janecek, on the electrolysis of saline solutions; Dr. Wasowicz, on crotaconic acid; Farsky, on superphosphates; K. Kruis, fermentation in spirit-refineries; M. Fischer, on the decomposition of collagenous substances; J. Stoklasa, on the geochemical conditions of Bohemian chalk-formation; Jal, on the estimation of hypophosphorous acid; J. Wiesner, on potassium-uranic chromates; K. Sykora, on certain coloured clays found in Bohemia, B. Rayman, on a new synthesis of methyl-phenyles; Farsky, chlorine as a nutriment of plants.

In the Section for Archæology and Anthropology, papers were read by Dr. Woldrich, on the skulls of prehistoric domestic dogs; J. Ossowski, on the objects found in caves near Cracow; Dr. Berger, on fibulæ found in Bohemia; Dr. Kopernicki, on the trepanation of prehistoric skulls in Bohemia; B. Jelinek, on the environments of Plesivec.

In the Section for Pædagogy the following papers were read or subjects discussed:—Dr. Hejzlar, how to teach physics and astronomy; F. Nekut, how to teach mineralogy; J. Mrazik, on the services rendered to pædagogy by medicine and natural science; J. Vanecek, necessity of teaching new geometry in middle schools; Dr. Kotal, on the treatises of natural science used in middle schools; J. Klika, how to popularise natural science; Pokorny, on teaching of gymnastics.

In an exhibition connected with the meeting many interesting objects touching upon Medicine and Natural Science were exhibited. From the scientific excursions by which the meeting was concluded only that into the well-known mine of Pribram, under the direction of Prof. Krejci, may be mentioned.

Only within recent years Natural Science began to be cultivated in Bohemia in the Slav language, and this is especially due to the establishment of a Bohemian Polytechnic School and recently of a corresponding division in the University of Prague though the last-named high school was founded already in 1348.

INDIA-RUBBER PLANTS

MR. W. T. THISELTON DYER brought before the Linnean Society, June 15, an important communication on the caoutchouc-yielding Apocynaceæ of Malaya and Tropical Africa. After giving a general sketch of the structural and physiological conditions of the occurrence of caoutchouc in plants, the author pointed out that the plants which appeared to yield it in commercial quantity in three widely-separated regions all belonged to one tribe of Apocynaceæ, the *Carisseæ*. In the East Indies the "gutta singgarip" of the Malay Peninsula, the "gutta soosoo" of Borneo, was the produce of a new species *Willughbeia*, *W. Burbidgei*. Many other species of this and allied genera also seemed to produce caoutchouc in quantity, worth collection. In Central Africa *Landolphia*, which was closely allied to *Willughbeia*, but differed in possessing terminal instead of axillary flowers, was the most important source. On the East Coast caoutchouc was yielded by *L. owariensis* and *L. florida*, the latter a very ornamental plant. As the rubber exuded from the cut stems, it was plastered by the collectors on the breast and arms, and the thick layer, when peeled off and cut up into squares, was called "thimble rubber." On the west coast the most important species was *L. Kirkii*, the rubber of which could be wound off into balls or small rolls from the cut stems, like

© 1882 Nature Publishing Group